

South Fla. Climatology, convection, mesoscale processes.

(Or, how CRYSTAL-FACE might plan for success
despite nature's complexity and our ignorance)

January 31 2002



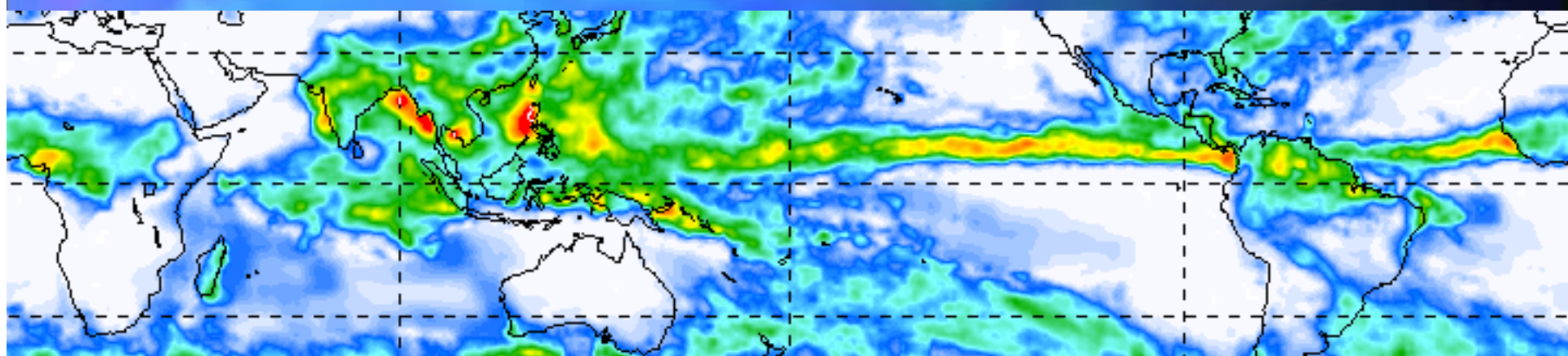
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Outline of Florida Weather in July

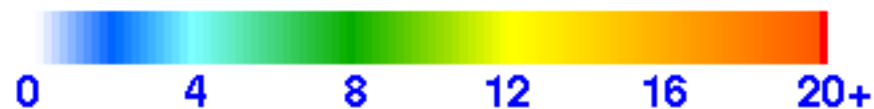


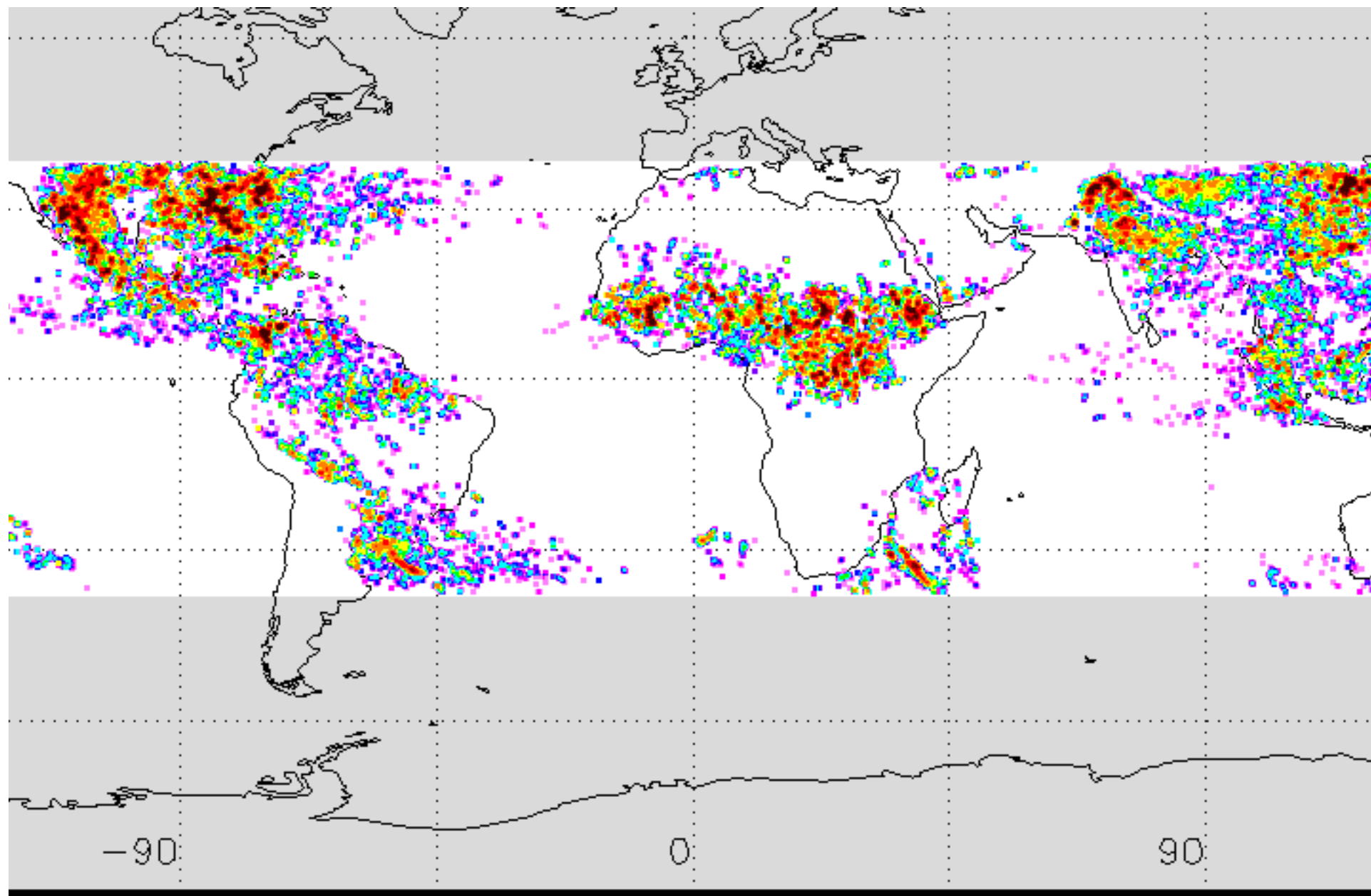
- Fla. Is in the subtropical high not the tropics
- A few disturbances but mostly diurnal forcing
- Winds at anvil levels often from NE, but.....
- Convective storms more intense over land than over water, with more lightning; convective systems on disturbed days have much weaker convection
- Diurnal patterns are repetitive, but never as simple as cartoons drawn for flight planning
- Ability to adjust way points is *essential*



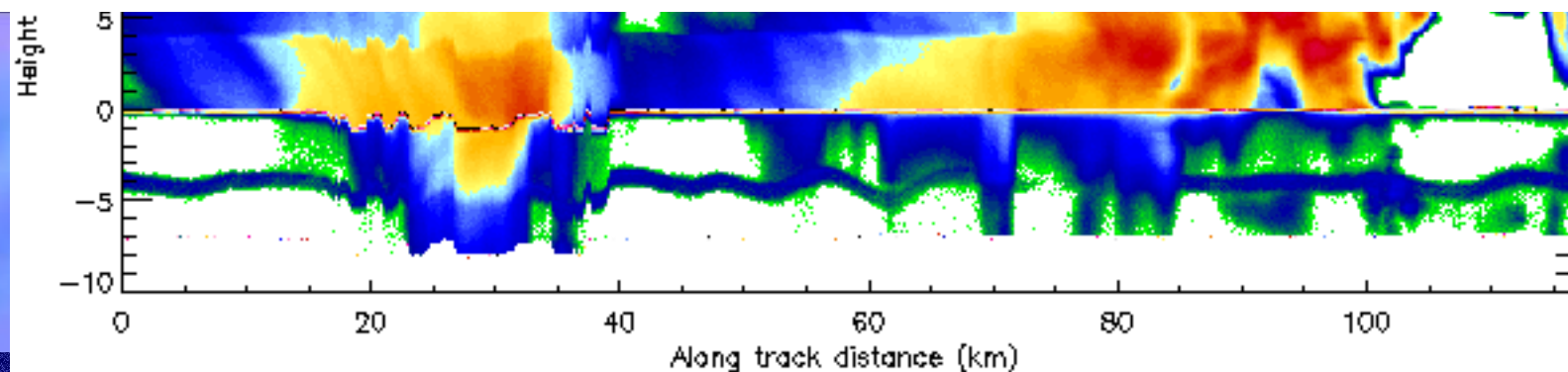
TRMM Merged Precip Jul 2000

(mm/d)

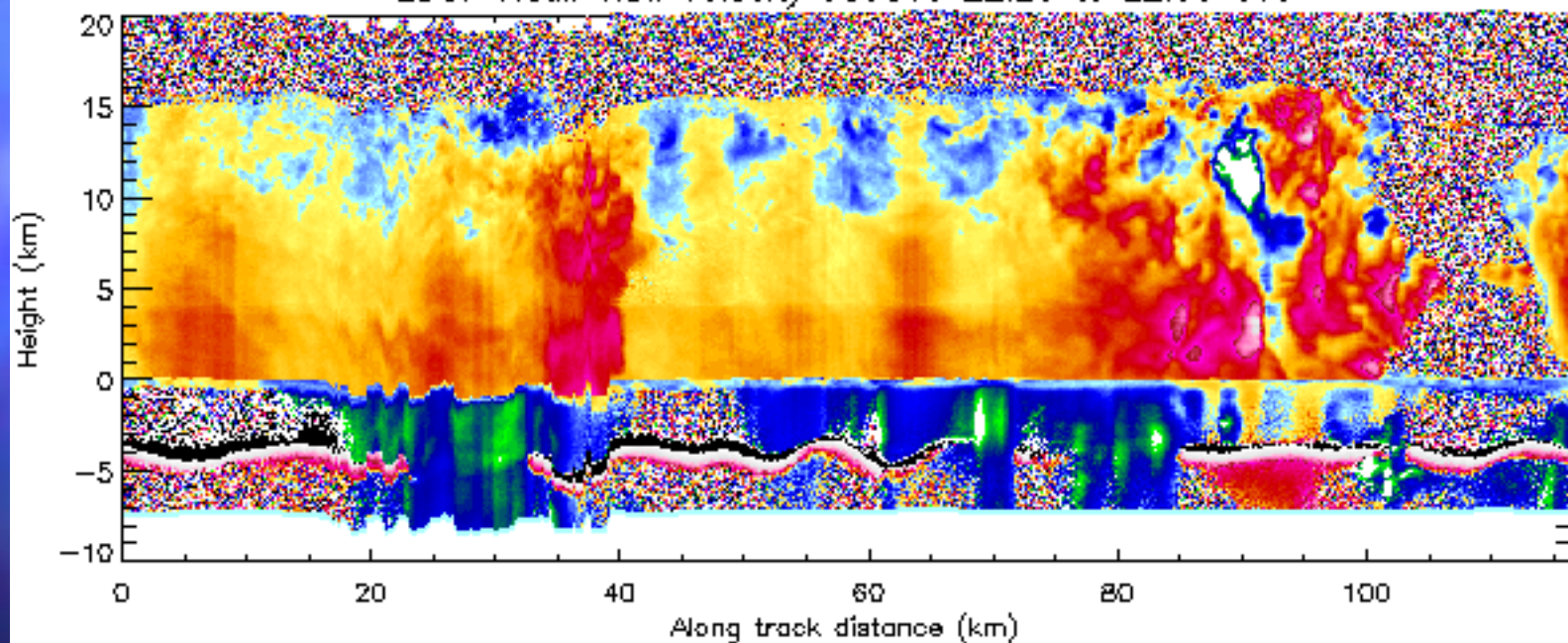




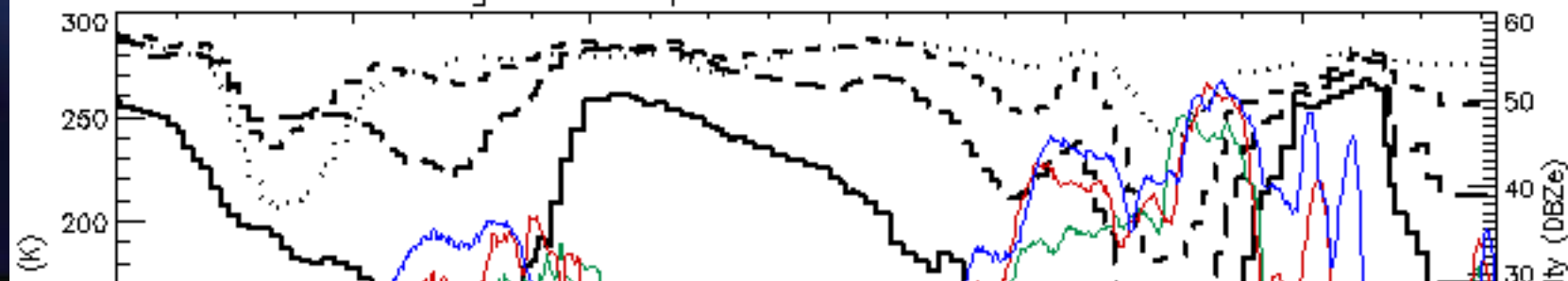
Flash scale



EDOP Nadir Raw Velocity 980815 22:23 to 22:30 UTC



AMPR Brightness Temperatures 980815 22:23 to 22:30 UTC

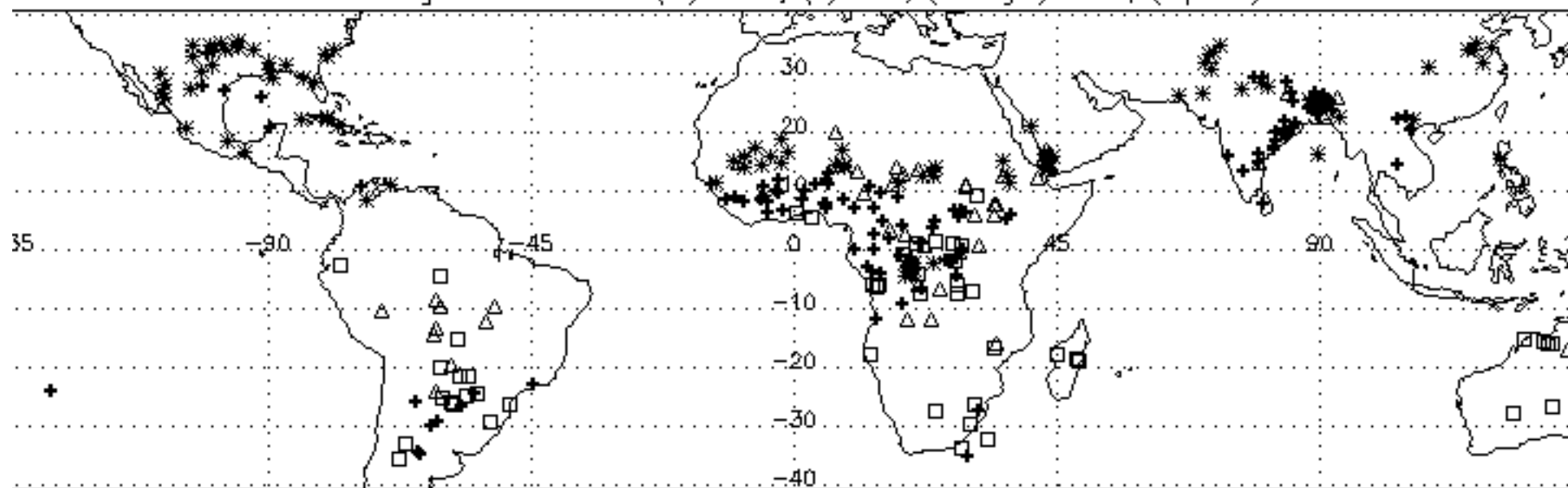




- How does the Florida area compare with the rest of the tropics with respect to convective intensity and the presence of Dessler's overshooting tops?
- Following figures suggest the answer: Far from the strongest or the weakest; won't get large tropopause penetrations over land, and none over water

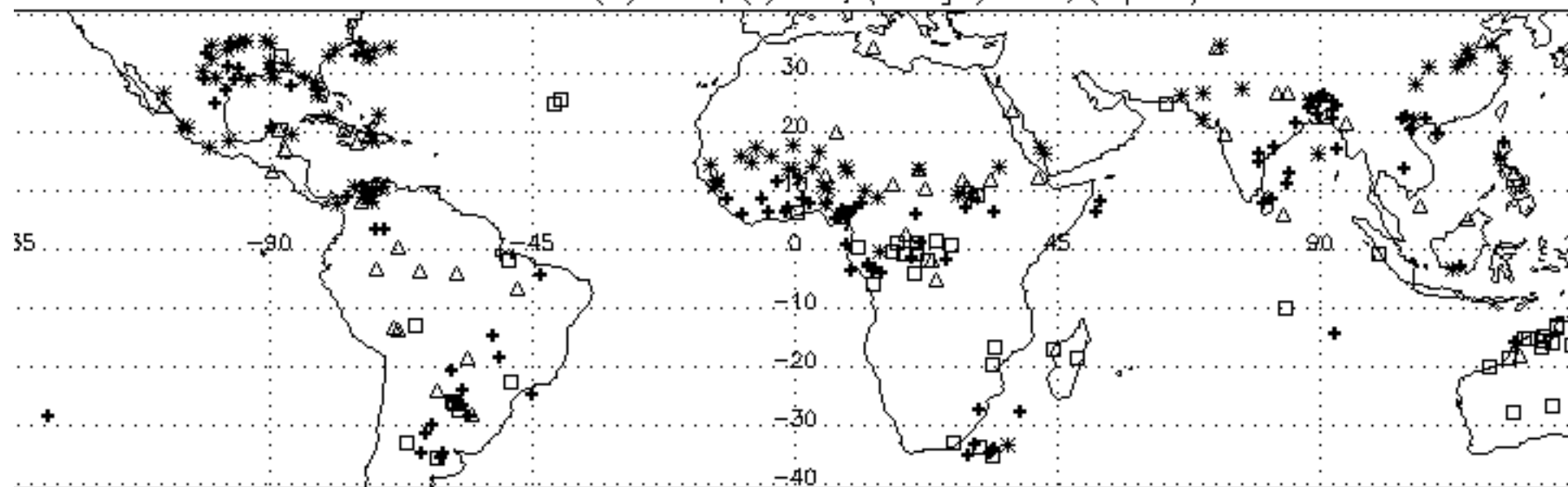


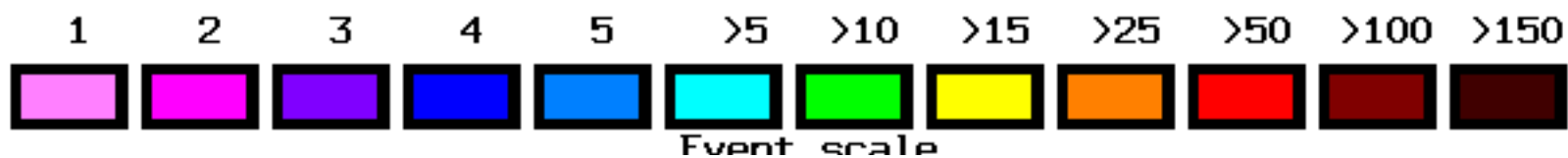
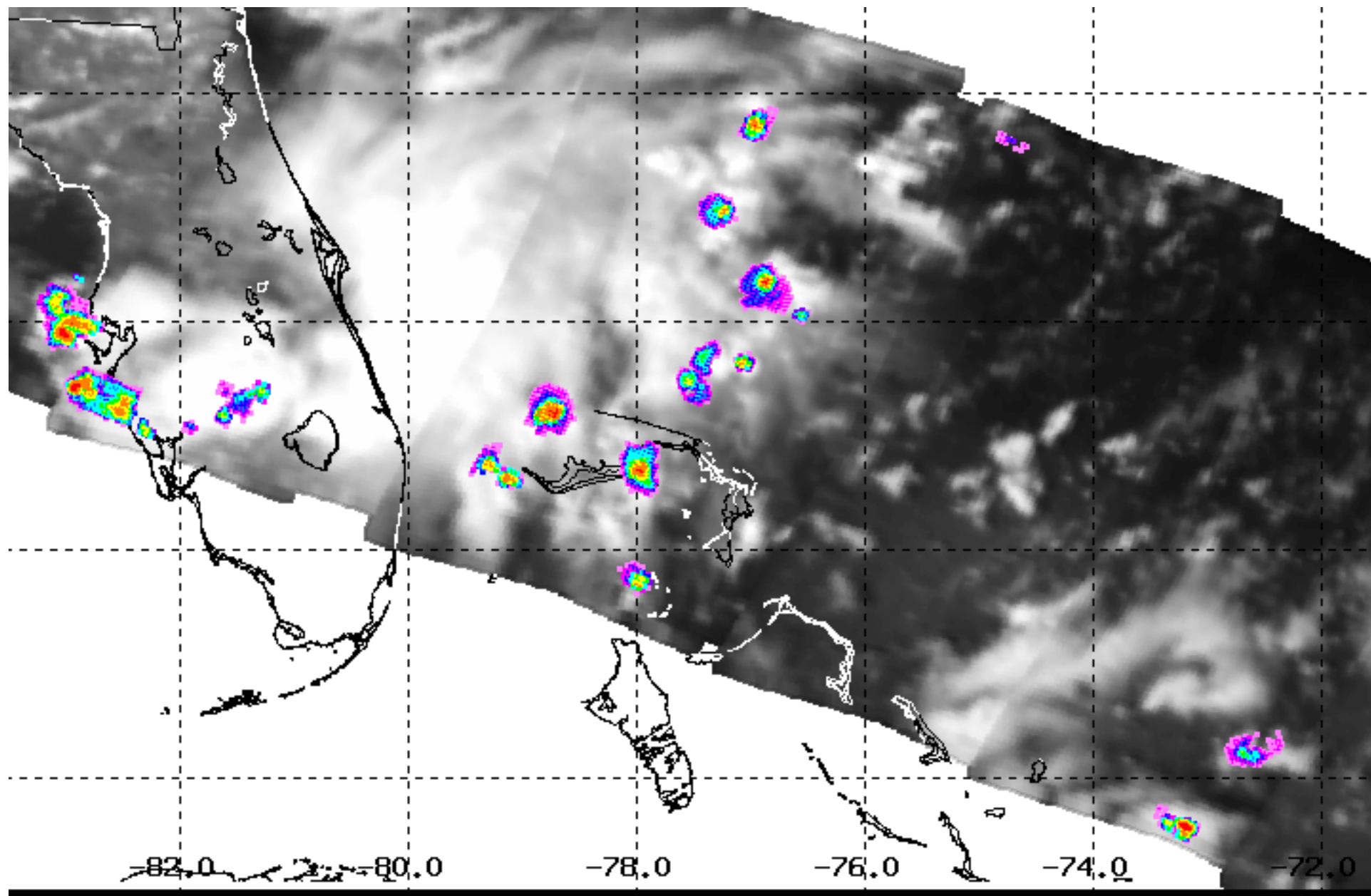
40-dBZ Height ≥ 15.0 km: (+)=MAM, (*)=JJA, (triangle)=SON, (square)=DJF

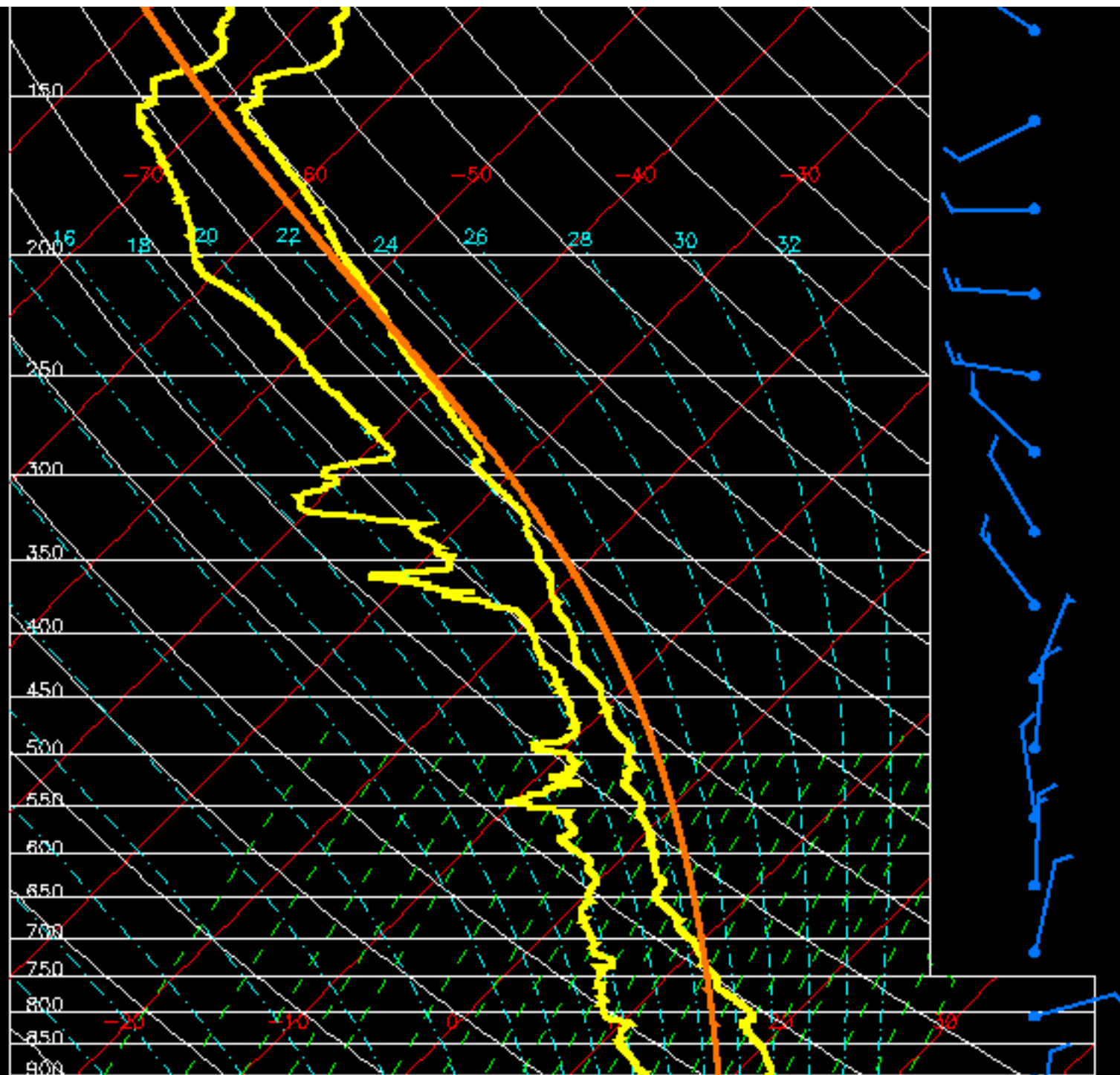


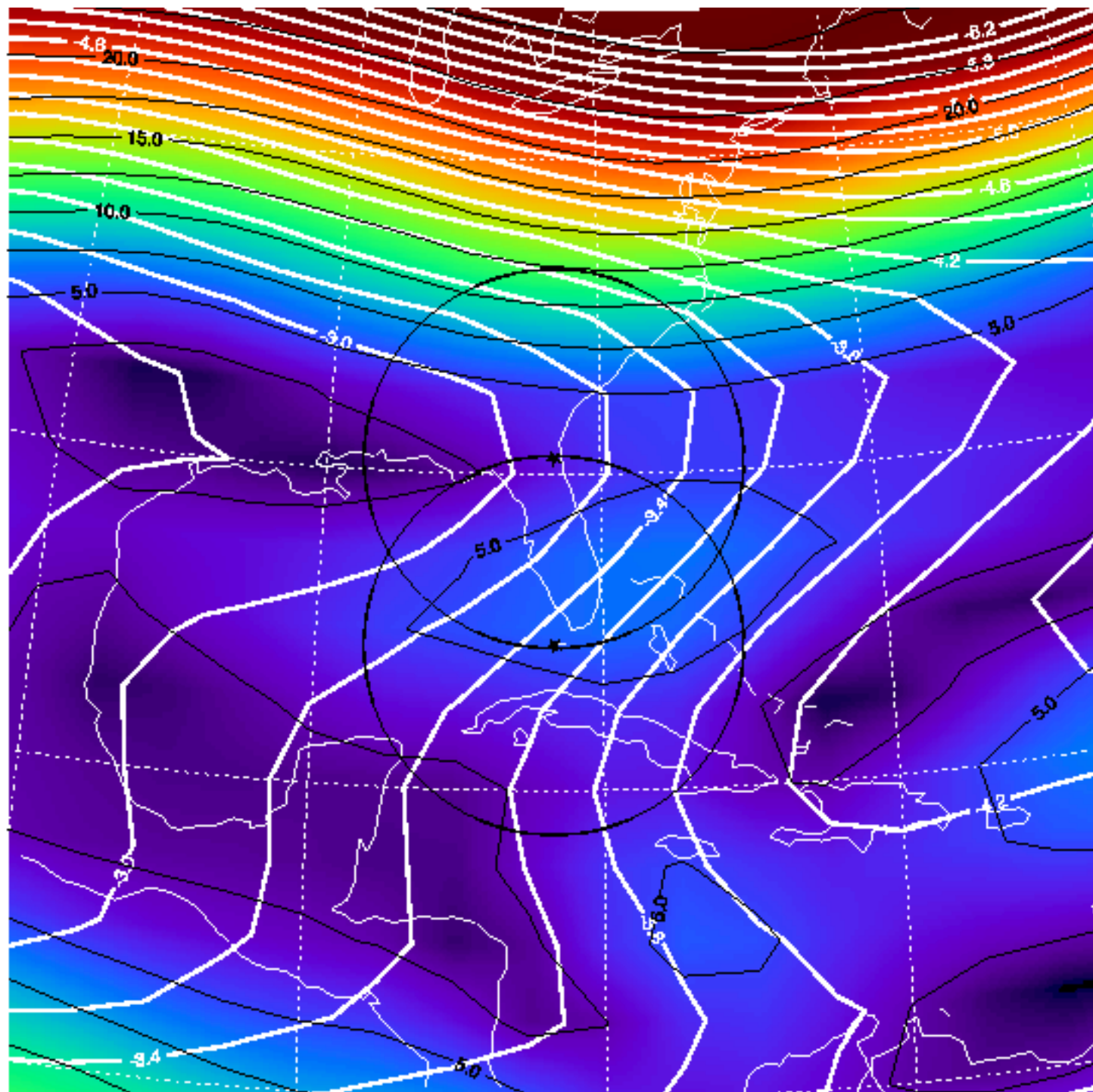


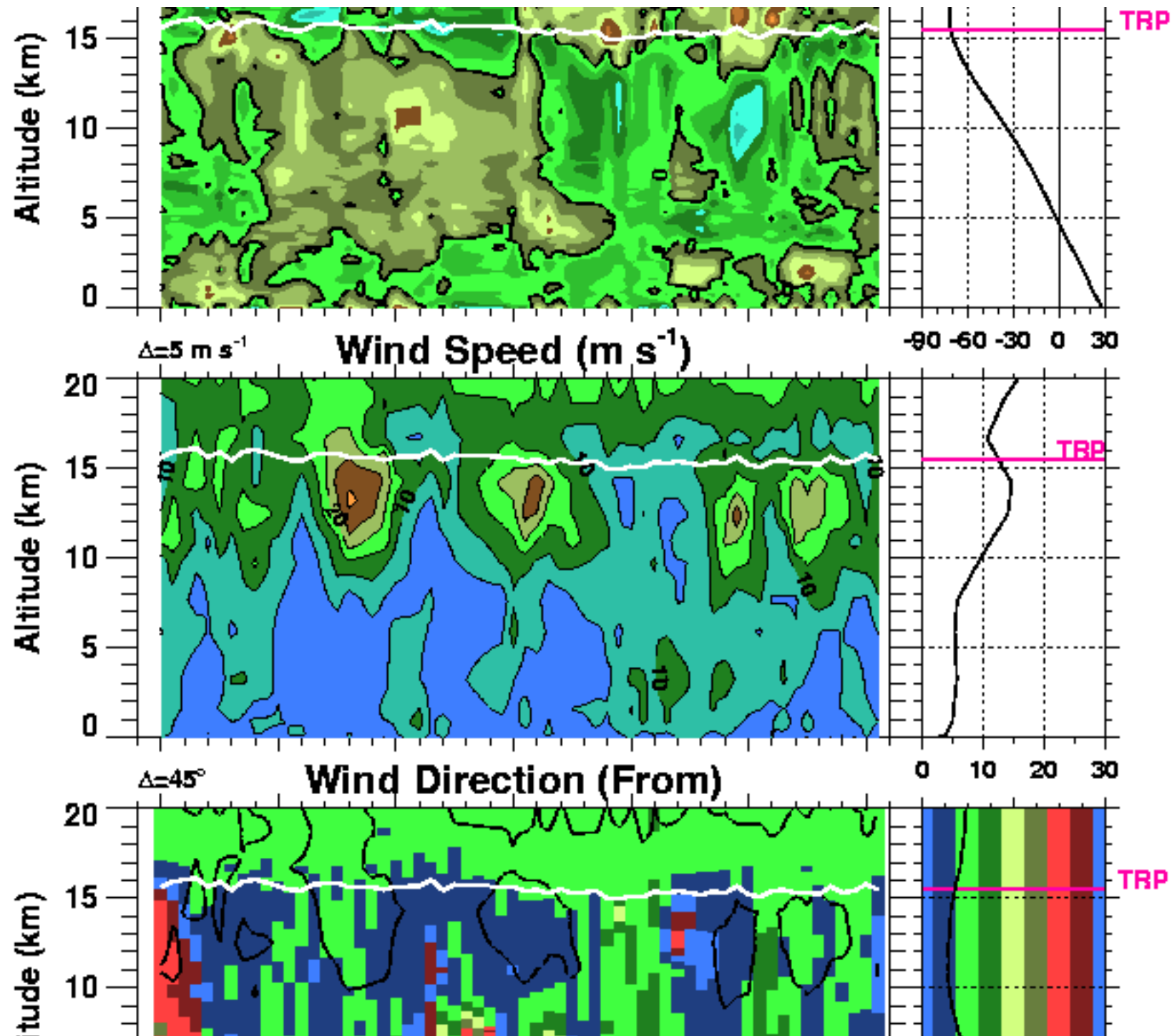
85-GHz Tb < 72 K: (+)=MAM, (*)=JJA, (triangle)=SON, (square)=DJF

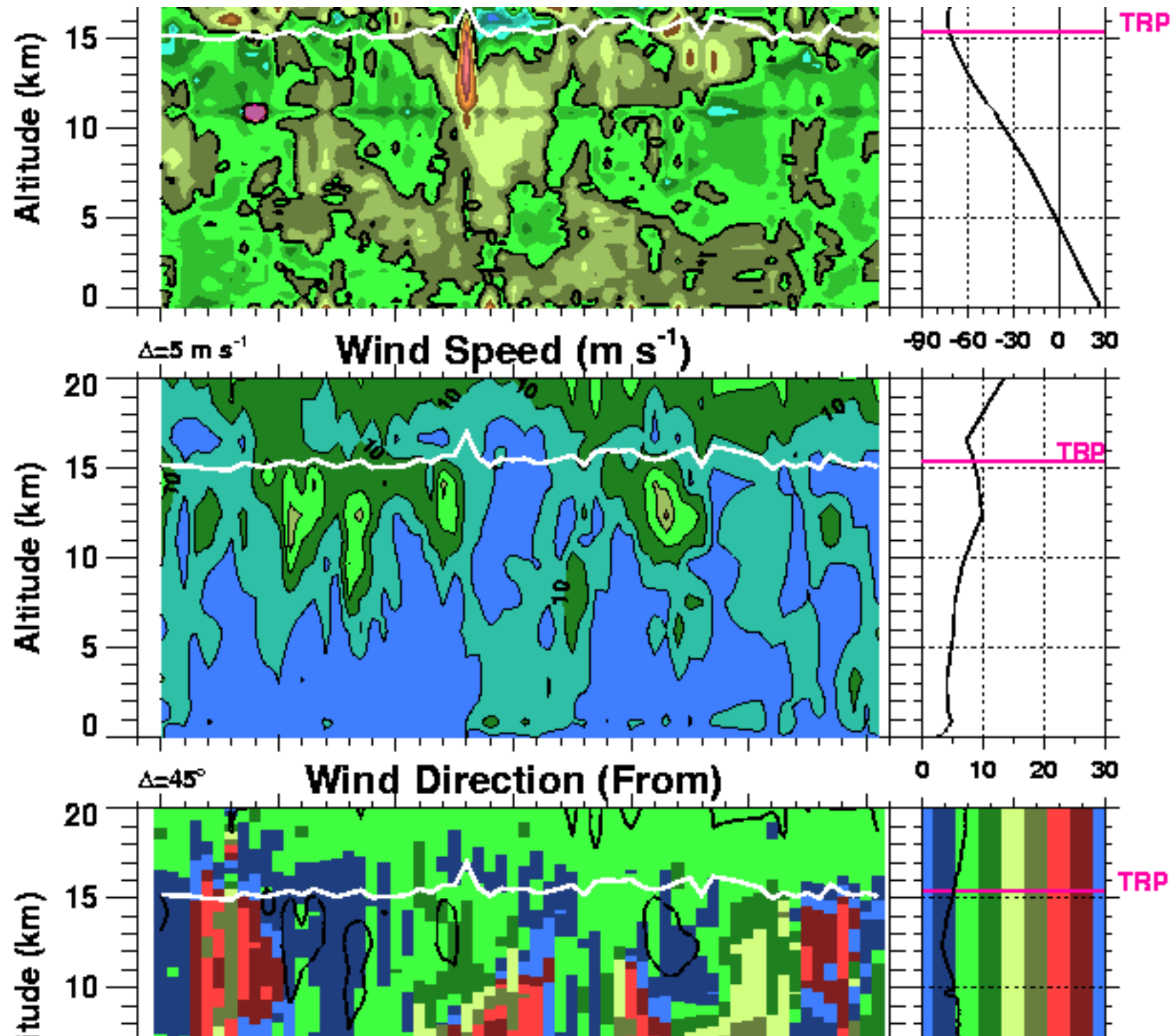


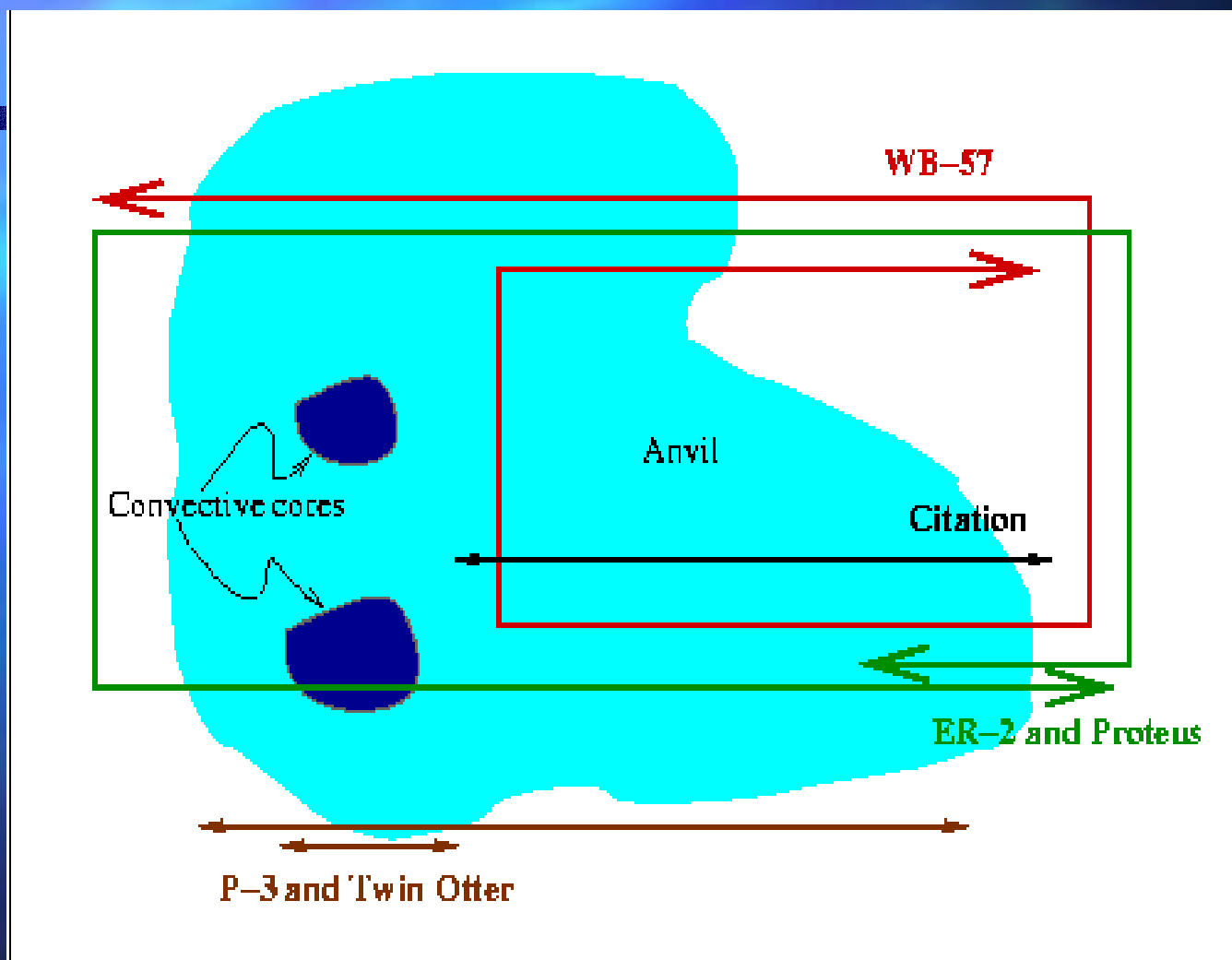


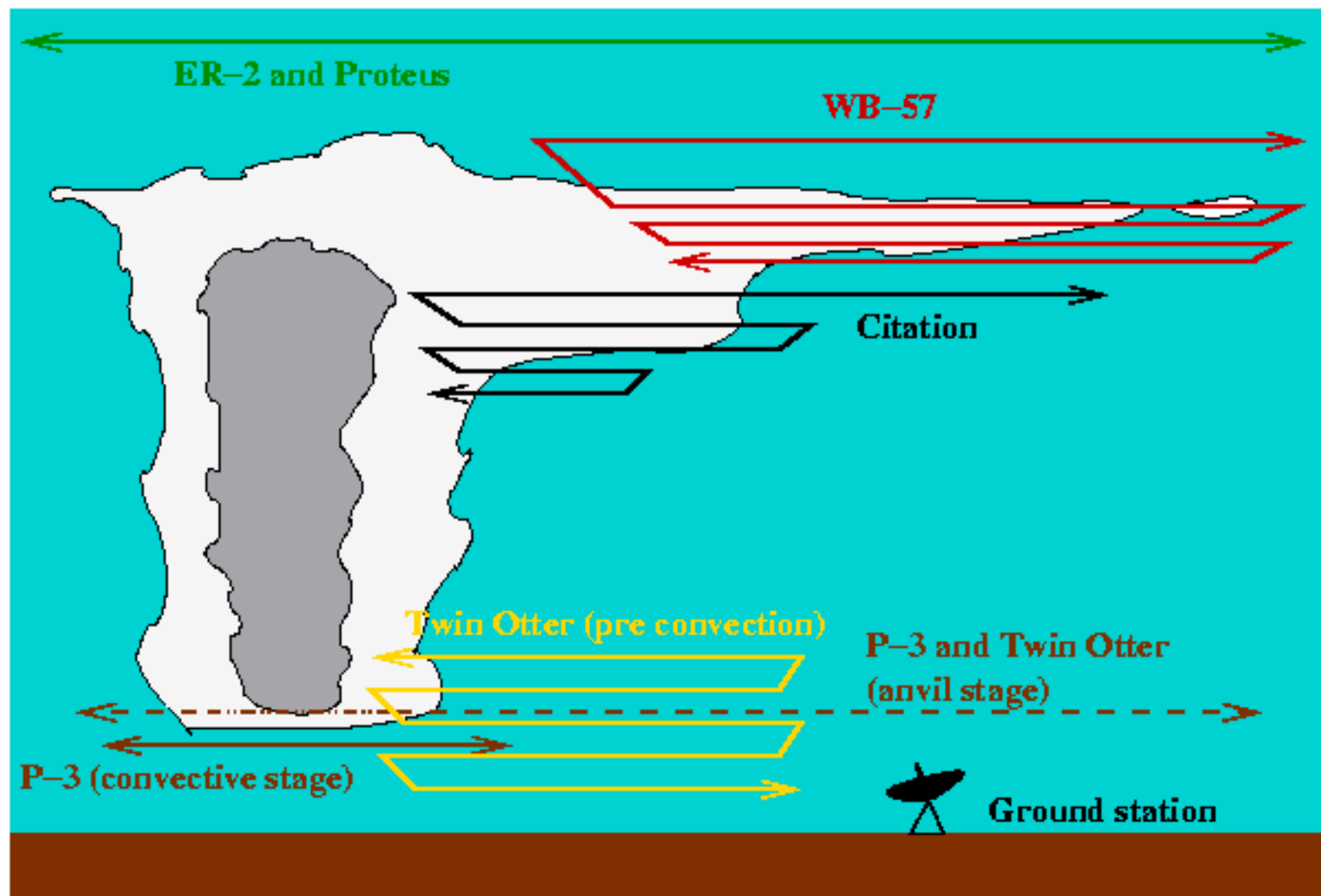










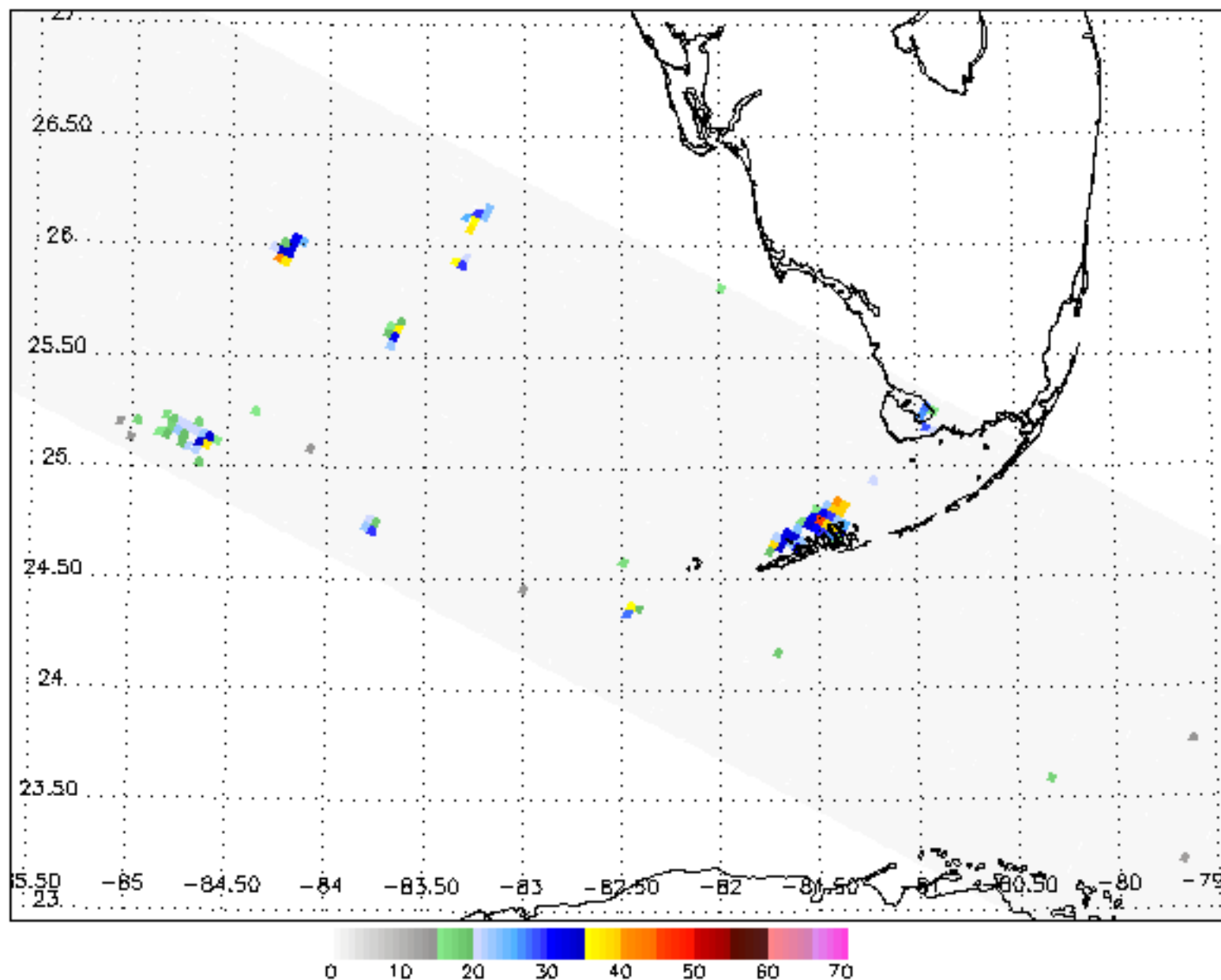




- Let's look at some examples from July 2000 using movie loops from CRYSTAL web pages. Think about how we would plan to fly on these days.

PR 3.0 km Reflectivity (dBZ)

Orbit 15091 20000711 21:14:45 to 20000711 21:17:28



Flight planning should consider.....



- Often, deep convection starts ~18, anvils ~20 UTC
- Could get good data most days between 17-23 UTC
- On occasion, large anvils will be over ground site later in the evening; hard to predict this mode
- Large disturbances will resemble TWP systems over water, day or night, and are quite safe to fly even in the convection.
- MUST be able to shift waypoints in flight
- RECOMMEND that up/down anvil flight lines be chosen for most aircraft; keep it simple.